蝶と蛾 *Trans. lepid. Soc. Japan* **50** (1): 41-47, January 1999

Yazakia, a new genus of the Boarmiini (Ennominae, Geometridae), with descriptions of four new species from Sulawesi

Rikio SATO

2-27-29, Shindori-nishi, Niigata, 950-2036 Japan

Abstract A new genus, *Yazakia*, is established for the reception of four new species from Sulawesi.

Key words *Yazakia*, new genus and species, Boarmiini, Geometridae, Sulawesi.

In my previous paper (Sato, 1995), two new genera and eight new species of the Boarmiini were described from Sulawesi. Recently I found a further four undescribed species belonging to the Boarmiini from Sulawesi. My careful examination of their external characteristics revealed that a new genus should be established to receive them. The four species are so far endemic to Sulawesi. The male and female genitalia indicate possible close relationships with many species of "*Paralcis*" from New Guinea as mentioned later.

The following abbreviations are used to indicate the depository of specimens. BMNH: The Natural History Museum, London. NSMT: National Science Museum, Tokyo. KY: K. Yazaki collection, Tokyo. RS: R. Sato collection, Niigata.

Yazakia gen. nov.

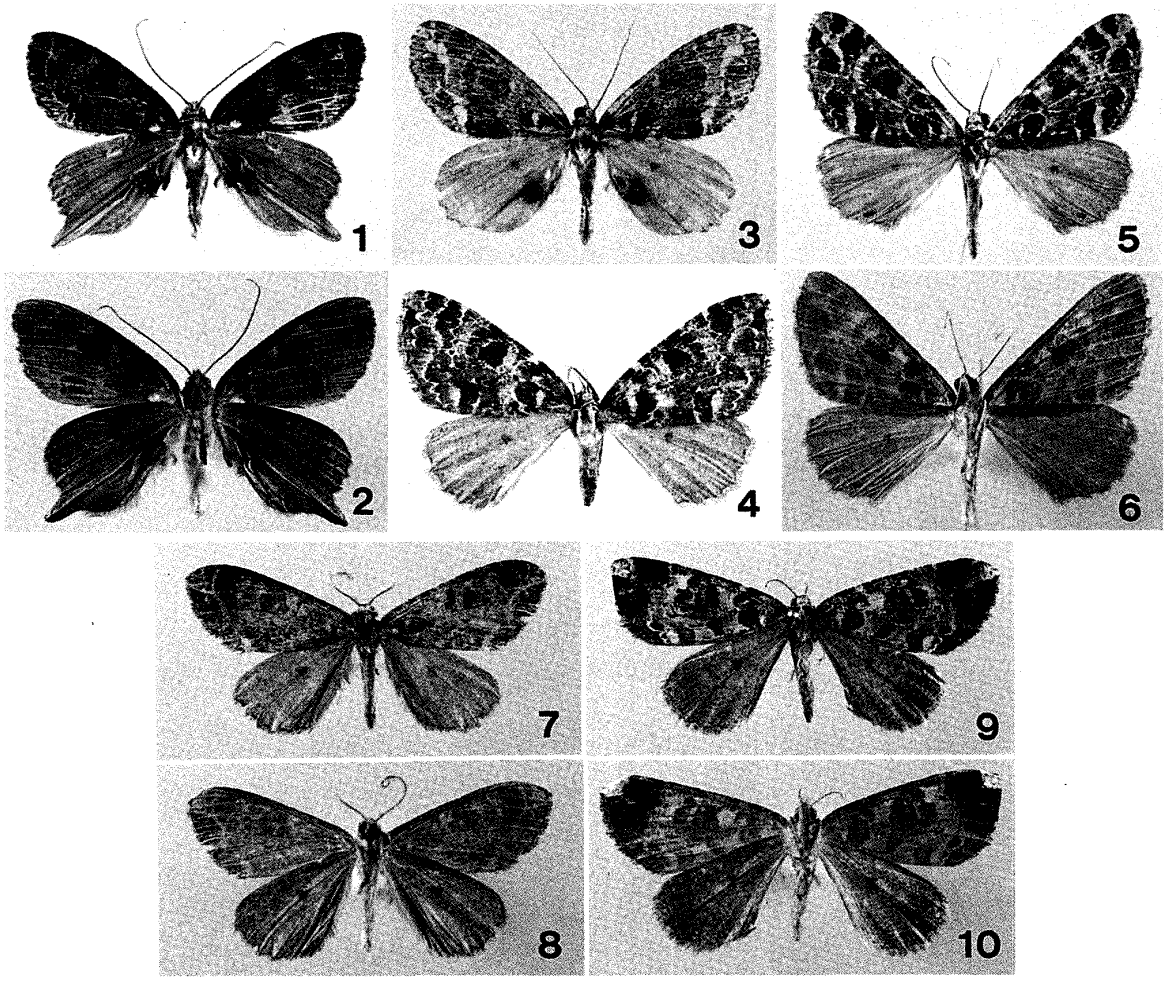
Type species: *Yazakia pilosaria* sp. nov.

Gender. Feminine.

Male. Proboscis developed. Palpus porrect, extending beyond frons. Antenna fasciculate. Third abdominal sternite bearing setal comb; sixth and seventh sternites with an elongate abdominal process covered with hairs respectively, but in *callipteris* sp. nov. and *kalisi* sp. nov. processes vestigial. Hind tibia with hair-pencil. Forewing with a well-developed fovea; 11-veined; R_1 entirely coincident with R_2, free from Sc, arising from discal cell; a short scaled projection from the middle of inner margin in *pilosaria* sp. nov. and *pulcherrima* sp. nov. or lacking in *callipteris* and *kalisi*. Hindwing more or less concave along vein CuA_2, in *pulcherrima* tail-like process including CuA_2 produced; many long hairs developed on veins CuA_2, A, and inner margin, especially in *pilosaria* and *pulcherrima* forming tufts of hairs. Underside of hindwing with many short hairs on vein CuA_2.

Female. Antenna filiform. No special characteristics in legs, abdominal sternites and both wings.

Male genitalia. Uncus triangular, longer than wide, apically bifid. Gnathos elongate with terminal portion bluntly rounded. Tegumen broad with a mass of deciduous long hairs on the dorsal surface. Valva broad with smoothly sclerotized broad costa; setose cucullus dilated; a digitate process with setae below cucullus; a mass of long hairs from the basal part of the valva. Juxta with posterior portion considerably larger and more thickly sclerotized than anterior portion. Aedeagus robust, as long as ventral margin of valva. Vesica armed



Figs 1–10. *Yazakia* spp. 1–2. *Y. pulcherrima* sp. nov. Holotype, ♂, NSMT. 3. *Y. pilosaria* sp. nov. Holotype, ♂, NSMT. 4–6. *Y. callipteris* sp. nov. (4. Paratype, ♀, NSMT. 5–6. Holotype, ♂, NSMT). 7–10. *Y. kalisi* sp. nov. (7–8. Holotype, ♂, BMNH. 9–10. Paratype, ♀, BMNH).

with spinous cornuti.

Female genitalia (*callipteris* and *kalisi*). Ovipositor not so long. Colliculum developed. Bursa copulatrix ribbed and sclerotized posteriorly, with a large stellate signum.

The following four new species belong to *Yazakia*: *Y. pilosaria* sp. nov., *Y. pulcherrima* sp. nov., *Y. callipteris* sp. nov. and *Y. kalisi* sp. nov. The former two species are different from the latter two in the development of an appendix-like process of the forewing and tufts of hairs in the hindwing. However, the appendix is reduced in some specimens of *pilosaria*, and lots of non-tufted hairs are developed in the latter. In spite of those external differences, they are identical to one another in the male genitalia. Therefore I have come to the conclusion that the four species should be placed in the same genus. The genus *Yazakia* is somewhat similar to "*Paralcis*" of New Guinea in the male and female genitalia. *Paralcis* Warren, 1894 was recently synonymized with *Psilalcis* Warren, 1893 by Holloway (1993), but about thirty species of New Guinea "*Paralcis*" seem to be different from the type species of both *Paralcis* (*conspicuata* Moore) and *Psilalcis* (*inceptaria* Walker) in the male and female genitalia, according to my examination of three New Guinea species: *Pa. fulvisecta* Warren (male), *Pa. complicata* Warren (male and female) and *Pa. coeculescens* Warren (female).

Close comparison of them with *Yazakia* indicates that another new genus should be established for the reception of the New Guinea "*Paralcis*" species after future revisional study.

The generic name, *Yazakia*, is dedicated to Mr Katsumi Yazaki, Tokyo, who gave me a good opportunity to examine very interesting specimens used in this study.

***Yazakia pilosaria* sp. nov.** (Fig. 3)

Male. Length of forewing 19–21 mm. Forewing. Ground colour dark brown, with black lines and cream yellow bands; antemedial line arising from a black spot at one-fifth of costa to one-fourth of inner margin, almost straight, followed by a pale yellow band below middle; medial line as in antemedial line, but less developed; postmedial line from one-third of costa, gently excurved beyond discal cell, to middle of inner margin, preceded and followed by pale yellow bands above middle; subterminal line pale yellow, sinuous, from costa before apex to inner margin near tornus; a broad curved pale yellow band from near apex to inner margin, meeting subterminal line below apex, postmedial band at middle and subterminal line at inner margin; scaled projection from inner margin short, sometimes lacking. Hindwing. Greyish with dark postmedial line and discocellular spot; tufts of hairs greyish with distal black portion. Underside. Paler and more uniformly coloured than in upperside, lines and bands of upperside weakly reproduced, but discocellular spot more distinct in both wings. Abdominal process of 6th sternite shorter than that of 7th (Figs 16–17). Female unknown.

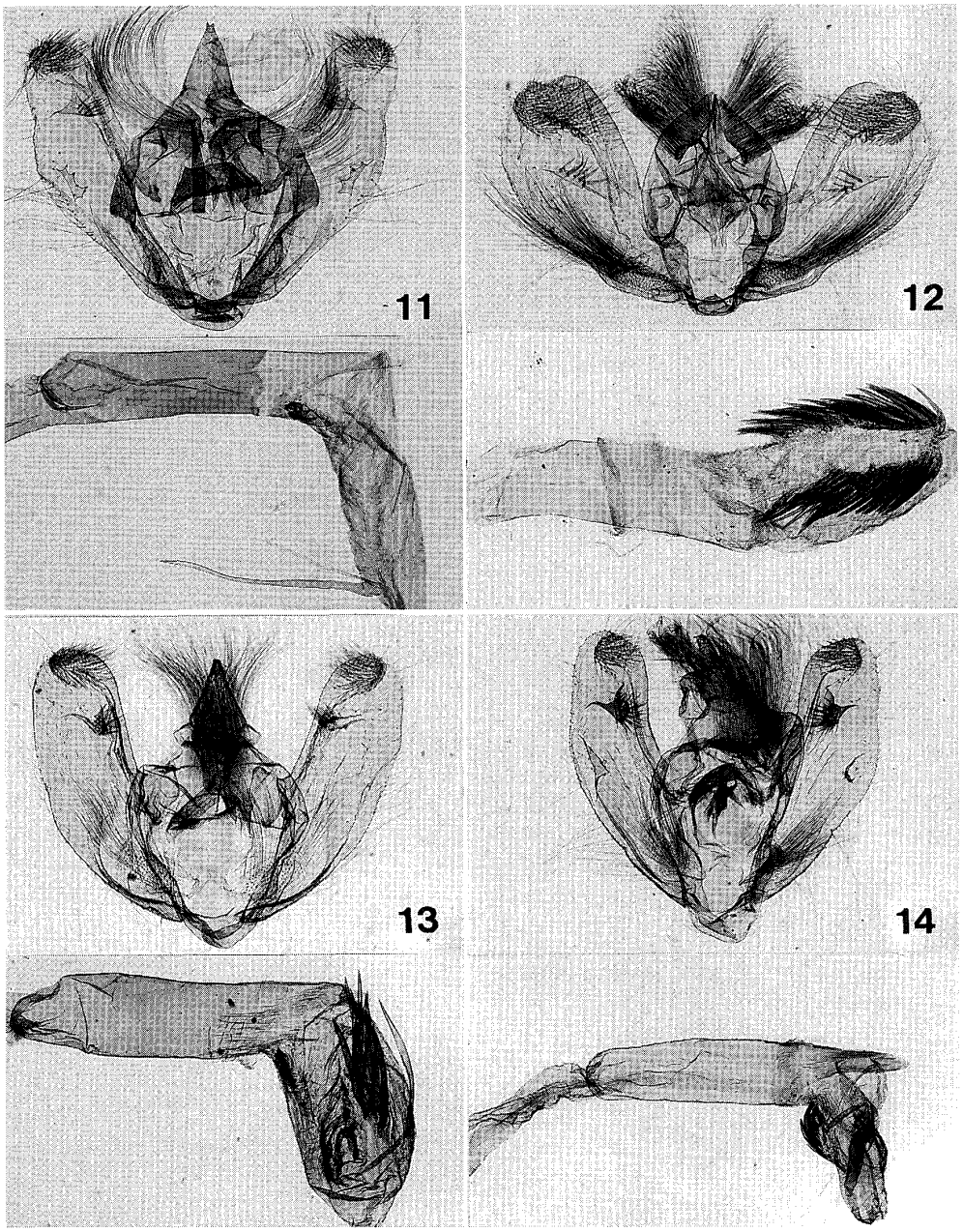
Male genitalia (Fig. 11). In addition to a digitate process near the cucullus another small process with sinuous margin produced at the middle of ventral margin of valva. Vesica armed with two sets of cornuti, two long spines and 5–7 short stout ones; in the former one spine half length of and much more thickly sclerotized than the other.

Holotype. ♂, Sulawesi, Sampuraga 1,300 m, 1. i. 1995 (S. & A. Saito *et al.*), NSMT. Paratypes. 3 ♂, Sulawesi, Mt Tambusisi, ii. 1996 (native collector); 1 ♂, Sampuraga, xii. 1994 (native collector), NSMT, KY & RS.

***Yazakia pulcherrima* sp. nov.** (Figs 1–2)

Male. Length of forewing 19–20 mm. Similar to the preceding species, but easily distinguished by having a tail-like process of the hindwing and the following characteristics. Antennal ciliation shorter. Forewing. Ground colour darker tinged with olive; black lines more distinct, cream yellow bands lacking; scaled projection from inner margin longer and stouter; medial line well defined, excurved in discal cell and between veins CuA_2 and 1A+2A; postmedial line strongly excurved beyond discal cell, then waved to inner margin; subterminal line cream yellow, fine, gently curved; discocellular spot large, wholly black. Hindwing. Greyish with discocellular spot faintly represented; deeply concave along vein CuA_2, producing a prominent tail-like process; tufts of long hairs more developed, black as a whole. Underside. Short hairs on CuA_2 more developed; forewing pale brown, weakly marked as in upperside; hindwing pale brown, lightly speckled with grey scales except central area; discocellular spot larger than in upperside. Abdominal process of 6th sternite longer than that of 7th (Fig. 15). Female unknown.

Male genitalia (Fig. 12). Similar to those of the preceding species in general structure. Pair of hair-bearing areas of tegumen more spacious. Medial part of gnathos more elongate. Valva wider and broadened apicad; costa broader; cucullus extending beyond ventral



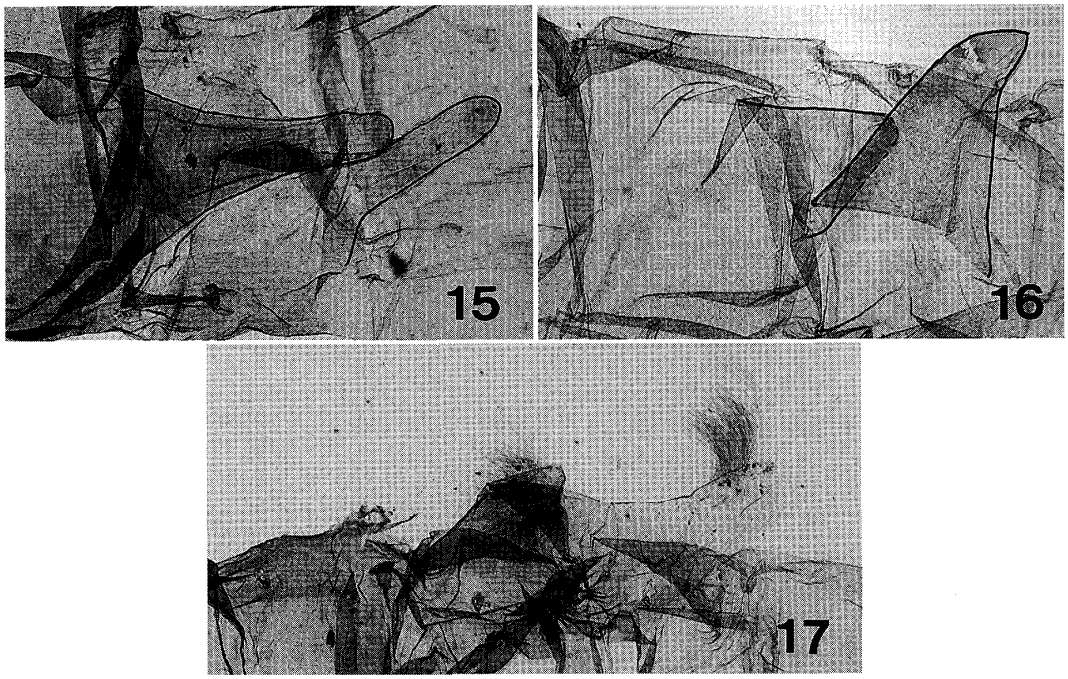
Figs 11–14. Male genitalia of *Yazakia* spp. 11. *Y. pilosaria* sp. nov. KY-2565, KY. 12. *Y. pulcherrima* sp. nov. RS-4910, NSMT. 13. *Y. kalisi* sp. nov. BMNH Geom. genitalia slide 19496. 14. *Y. callipteris* sp. nov. RS-5372, RS.

margin of valva; triangular process below cucullus bearing 6–7 short spines. Aedeagus slenderer, with two rows of numerous short spines on vesica.

Holotype. ♂, Sulawesi, Mt Tambusisi, ii. 1996 (native collector), NSMT. Paratype. 1 ♂, same data as holotype, RS.

Yazakia callipteris sp. nov. (Figs 4–6)

Length of forewing 23–24 mm. Male. Forewing. Appendix-like process not-developed; ground colour dark brown mottled with cream yellow; a cream yellow broad band arising



Figs 15–17. Male 6th and 7th sternites of *Yazakia* spp. 15. *Y. pulcherrima* sp. nov. Ventral aspect, RS-4910, NSMT. 16–17. *Y. pilosaria* sp. nov. (16. Ventral aspect, KY-2565, KY. 17. Lateral aspect, RS-4571, RS).

from apex gently curved to inner margin before tornus, meeting a short band from one-fifth of costa and postmedial band; medial area yellowish except a large black spot in discal cell. Hindwing. Grey tinged with yellow; a small dark grey discocellular spot faintly represented; yellowish hairs developed basally, but not tufted as seen in the preceding two species. Underside. Pale brown, lightly speckled with grey scales on hindwing; discocellular spot more distinct than in upperside; yellowish short hairs developed basally. Abdominal sternites 6 and 7 without process, but slightly projected posteriorly. Female. Almost identical with male, but a little darker with less defined yellowish markings.

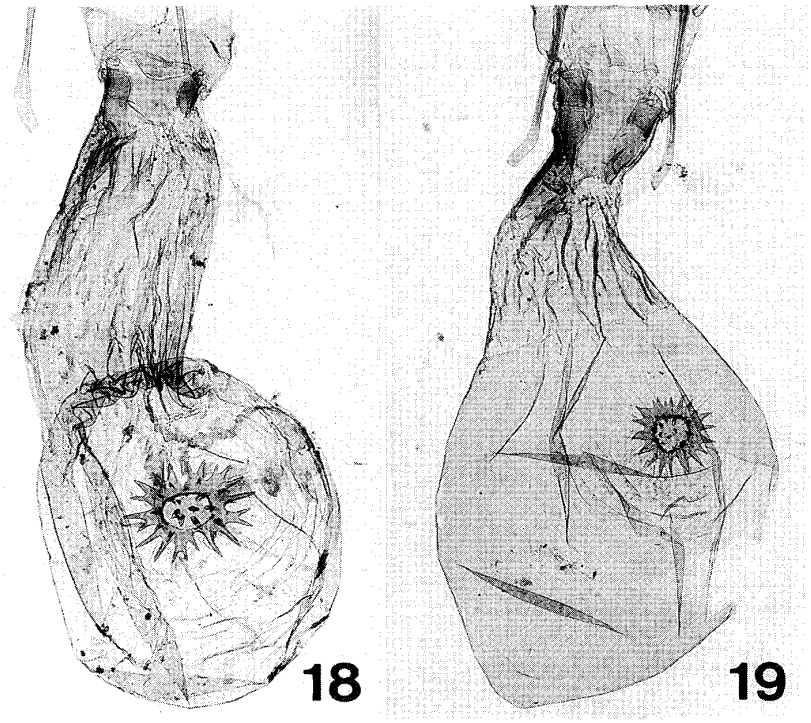
Male genitalia (Fig. 14). A triangular process produced at the middle of ventral margin of valva. Juxta split into two apically. Aedeagus slender, with two groups of spines of varying length on vesica; the one is larger in number (13–15) than the other (6–8).

Female genitalia (Fig. 19). Colliculum longer than width. Posterior one-third of bursa copulatrix ribbed and lightly sclerotized.

Holotype. ♂, Sulawesi, Puncak Dingin 1,700 m, x–xi. 1985 (S. Nagai), NSMT. Paratypes. Sulawesi. 2 ♂ 3 ♀, same data as holotype; Pulu Pulu, 2 ♂, vi. 1995 (native collector), NSMT & RS.

***Yazakia kalisi* sp. nov.** (Figs 7–10)

Length of forewing 20–22 mm. Smaller in size than *callipteris*. Similar to *callipteris* in general wing pattern, but much darker with less defined maculation. Male. Forewing. Black spot in discal cell divided into two; yellowish lines and bands almost invisible. Hindwing. Grey not tinged with yellow; a dark grey discocellular spot larger than in *callipteris*; weakly concave along vein CuA_2; greyish hairs developed basally, but not tufted. Underside.



Figs 18–19. Female genitalia of *Yazakia* spp. 18. *Y. kalisi* sp. nov. RS-4566, RS. 19. *Y. callipteris* sp. nov. RS-4907, RS.

Fuscous; markings in upperside faintly reproduced; discocellular spot of hindwing more defined than in upperside; greyish short hairs developed basally. Abdominal sternites 6 and 7 not projected posteriorly. Female. Yellowish markings more developed than in male. Underside of hindwing characterized by a white rectangular apical patch surrounded by distal black area.

Male genitalia (Fig. 13). Similar to those of *callipteris*. No process along ventral margin of valva. Digitate setose process below cucullus smaller. Medial part of gnathos broader. Juxta split into two apically. Aedeagus stouter with two groups of long and short spines on vesica. The former 7–8 and the latter about thirty in number.

Female genitalia (Fig. 18). Colliculum shorter than width. Posterior half of bursa copulatrix cylindrical, ribbed and sclerotized ; signum larger than in *callipteris*.

Holotype. ♂, Sulawesi, "S. W. CELEBES, G. Lampobattang, Parang-bobo Goa, 5,000 ft., May 1938, JP. A. Kalis, B. M. 1938-610", BMNH. Paratypes. Sulawesi. 1 ♂ 13 ♀, same data as holotype, BMNH; S. Sulawesi, Bonthain, Parang Bintlo, Mt Lompobatang, 1 ♂ 1 ♀, 5. v. 1993 (S. & A. Saito), RS.

Acknowledgements

I would like to express my deep gratitude to Ms K. Buckmaster and Dr M. Parsons, The Natural History Museum, London for the loan of specimens and information on the data of specimens under their care, and Dr S. E. Miller, Bishop Museum, Honolulu, for the loan of New Guinea species from a Freeport environmental survey. I am grateful to Dr H. Inoue, Prof. Emeritus of Otsuma Women's University, Iruma, for his critical reading of the manuscript. I also thank Messrs K. Yazaki, S. Saito, N. Bito and S. Nagai for the loan or gift

of valuable specimens.

References

Holloway, J. D., 1993. The moths of Borneo: family Geometridae, subfamily Ennominae. *Malay. Nat. J.* **47**: 1-309, pls 1-19, 593 figs.

Sato, R., 1995. Descriptions of two new genera and eight new species of the Boarmiini (Geometridae, Ennominae) from Sulawesi. *Trans. lepid. Soc. Japan* **46**: 33-43.

摘　　要

新属 *Yazakia* と Sulawesi 産 4 新種 (エダシャク亜科) の記載 (佐藤力夫)

最近，矢崎克己氏から託された後翅の内縁付近に顕著な毛束をもつエダシャク 2 種は，明らかに新属新種であった．一方，既に私の手元にあった別の未記載の 2 種も，毛束を欠くが後翅内縁付近に多くの毛が密生しており，♂交尾器の形態が等質的であることから，同属として扱うべきものと考えた．いずれも Sulawesi に固有の種と思われる．

新属．*Yazakia* Sato．模式種: *Yazakia pilosaria* Sato.
新種．*Y. pilosaria* Sato, *Y. pulcherrima* Sato, *Y. callipteris* Sato, *Y. kalisi* Sato.

なお，New Guinea から，*Paralcis* 属として記載された種が 30 種あまり知られており，*Yazakia* に外観や交尾器が類似するものが含まれている．*Paralcis* は，Holloway (1993) によって *Psilalcis* のシノニムとして整理されたが，New Guinea に豊富に生息するこれらの種は *Psilalcis* とは明らかに異質である．将来，種の再検討をしたうえで新属を設定するとともに *Yazakia* との類縁関係も研究する必要があろう．

(Accepted September 1, 1998)

Published by the Lepidopterological Society of Japan,
5-20, Motoyokoyama 2, Hachioji, Tokyo, 192-0063 Japan